

TRIBAL REVISIONS IN THE ASTERACEAE. X.

THE RELATIONSHIP OF PLAGIOCHEILUS.

H. Robinson and R. D. Brettell
Smithsonian Institution, Washington, D.C. 20560.

The general appearance of the South American genus Plagiocheilus greatly resembles members of the tribe Anthemideae and the genus has consistently been placed in that tribe since its original description by DeCandolle (1938). A recent survey of the Anthemideae has shown that the genus lacks important pollen, style and corolla gland characters that delimit that tribe. Plagiocheilus shows relationship, instead, to a rather distinctive series of genera in the tribe Astereae.

Plagiocheilus differs from the Anthemideae by the pollen which has an exine of apparently simple structure, by a style that is not truncate, and by glands on the corolla having small tips that are not laterally compressed. Also, the heads of Plagiocheilus have sterile disk achenes, a character that proves to be rare if not entirely lacking in the newly delimited tribe Anthemideae.

The proper relationship of Plagiocheilus is evidently to the tribe Astereae, though this has not been easily proven. Difficulties result from the modified styles of the functionally male disk flowers, from the usually nearly aborted anther appendages, and from the mostly quadrate exothecial cells with nodular thickenings on both lateral and transverse walls. Lack of pappus and the only 2-3 series of phyllaries also present problems. The discovery of closely related genera sharing many of the same characters has provided the most satisfactory proof of Asterean relationships, and this has been confirmed by the presence of more Asterean anther appendages in P. tanacetoides Arn. ex DC. and more Asterean exothecial cells in P. prostratus Benth. One species, P. erectus Rusby, is to be excluded from consideration since it is a member of the genus Chrysanthellum in the Coreopsinae.

The relatives of Plagiocheilus include a group of genera discussed by Cabrera (1966) in his review of the genus Lagenophora. These were recognized as members of the subtribe Grangeinae. Also related is the small high-elevation monotypic genus from Colombia, Floscaldasia Cuatrecasas (1969). Many individual features of these genera are notable.

Exothecial cells. Members of the Astereae almost all have elongate exothecial cells with thickenings prominent on the lateral walls, and the tribe can usually be recognized with the

help of this feature. The character is sufficiently fixed in the tribe so that the exceptions are significant. One exception, Hinterhubera Schultz Bip. ex Weddell of northern South America, has recently been placed in a distinct subtribe by Cuatrecasas (1969). Other known exceptions, Floscaldasia Cuatre. of High elevations in Colombia, Plagiocheilus Arn. ex DC. of South America and Lagenophora Cass. from SE. Asia, Australia, New Zealand and parts of South America, all seem to belong to a related group also including Laestadia Kunth ex Less. and Solenogyne Cass.

Glands. Almost all members of the Astereae have glands on their corollas and these are useful in distinguishing members of the tribe from the Senecioneae. Plagiocheilus, Floscaldasia, Lagenophora and Laestadia all have such glands especially on the bases of their corollas and on the upper parts of their ray achenes. Only Solenogyne of the group seems to lack any glands on the corollas and achenes and fortunately other features including typical Asterean exothelial cells and anther appendages are present to help indicate the relationship.

Achenes. The ray achenes of Plagiocheilus are asymmetric and laterally compressed. Similar achenes are found in the related genera such as Lagenophora and Solenogyne which have narrow apices. The achenes of Floscaldasia are less compressed but more similar in outline.

Rays. The pattern of many series of ray flowers and few functionally male disk flowers seems well established in the group of genera including Plagiocheilus, Floscaldasia, Lagenophora, Solenogyne and Laestadia. The only unusual feature of Plagiocheilus is the bilabiate ray corolla having one or two smaller lobes on the inner side.

Setae on achenes. In two species of Plagiocheilus, P. tanacetoides and P. prostratus, the achenes bear a type of seta that is peculiar even for the tribe Astereae which might be noted for its odd and distorted achene setae. Those of Plagiocheilus (Figure) have the usual two series of cells but



the basal cells are nearly solid with thick walls while the rest of the seta is thin-walled. The outer walls are thinner and more distorted. The apex of the seta

has the two cells abruptly spreading and recurving rather in the form of an anchor.

Leaf. The dissected form of the leaf in Plagiocheilus seems to be the primary reason for the previous disposition in the Anthemideae. In fact, such leaves are not too common in the

Astereae, especially among the closely related genera. Still, in Solenogyne there is a distinctly lobed leaf blade.

Pappus. The achenes of Plagiocheilus and related genera are almost all without pappus. An exception is Floscaldasia. The distinctive reduced and nearly smooth setae of this last genus have been very clearly illustrated in the work of Cuatrecasas (1969).

Cabrera (1966) has made a key to the group of genera related to Lagenophora. The key is modified below to include Plagiocheilus and Floscaldasia.

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| 1. Achenes with setose pappus | <u>Floscaldasia</u> |
| 1. Achenes without pappus | 2 |
| 2. Achenes without glands at the apex; ray florets tubular or nearly so | <u>Solenogyne</u> |
| 2. Achenes with glands at the apex or on the beak | 3 |
| 3. Ray florets tubular; stems branched, leafy | <u>Laestadia</u> |
| 3. Ray florets ligulate | 4 |
| 4. Ray corollas bilabiate; leaves dissected; disk florets pentamerous | <u>Plagiocheilus</u> |
| 4. Ray corollas not bilabiate; leaves not dissected | 5 |
| 5. Caulescent herbs with ramose leafy stems; heads usually many; achenes usually without beak (seldom with a short beak) | <u>Myriactis</u> |
| 5. Herbs usually with scapiform stems; head usually solitary | 6 |
| 6. Disk florets pentamerous; achenes always beaked; rhizomes slender | <u>Lagenophora</u> |
| 6. Disk florets tetramerous; achenes with or without a beak; rhizomes thick | <u>Keysseria</u> |

Literature Cited

- Cabrera, A. L. 1966. The genus Lagenophora (Compositae).
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- Cuatrecasas, J. 1969. Prima Flora Colombiana 3. Compositae -
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